THE INSTITUTE FOR
TRIPLE HELIX
INNOVATION

June 11, 2007

Advisory Committee
Measuring Innovation in the 21st Century Economy
c/o Elizabeth (E.R.) Anderson
Deputy Under Secretary for Economic Affairs
U.S. Department of Commerce
1401 Constitution Avenue
Washington, DC 20230

Re: Request for Comment: Measuring Innovation in the 21st Century Economy

Dear Advisory Committee on Measuring Innovation in the 21st Century Economy:

This letter and the enclosed document provide the Institute for Triple Helix Innovation's perspective on the optimal innovation framework for the 21st Century and comments on the four topical areas that are presented in the April 13, 2007, *Federal Register* notice on Innovation Measurement.

The Institute is a Federally-funded Hawaii-based non-profit corporation with a Congressional mandate to facilitate regional, national and international systems for collaborative innovation through a robust and enduring program of cross-cutting Research and Development (R&D). The Institute's current research includes the validation of cross-sector, interdisciplinary methodologies for collaboration and innovation; the development of novel information and communications technology (ICT); and, the creation of distributed networks that leverage human and material resources with integrated solutions. The Institute functions as a national arbiter of trilateral (academia, industry, and government) innovation best practices and of collaborative innovation methodologies, with a mission: "To enable the nation to realize its collaborative potential for economic growth, efficiency, and innovation." Over time, the wealth of knowledge accumulated through Institute endeavors will accelerate the transmission of new technologies from idea to market and create more efficient mechanisms for translating empirical data into usable products and processes.

The Institute applauds Secretary of Commerce Carlos M. Gutierrez's decision to initiate this effort to explore innovation in the 21st century, and the work of the Advisory Committee on Measuring Innovation in the 21st Century Economy. We submit these comments to inform the Advisory Committee of our ongoing work and to offer what we hope will be useful insights concerning efforts to research innovation.

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We invite the Advisory committee to contact the Institute, should the need arise, as it proceeds with its work.

Sincerely,

/s/ LEIGH W. JEROME

Leigh W. Jerome, Ph.D.
Director

Enclosure

Comments For:
The Advisory Committee on Measuring Innovation in the 21st Century Economy

The Triple Helix Innovation Perspective

The Institute for Triple Helix Innovation (hereafter, the Institute) holds the following broad perspective on the optimal framework for innovation. We believe that innovation requires more than the emergence of a good idea or a promising prototype. Bringing the benefits of new technology, new products, new processes, and new knowledge to the market is a key challenge for an innovation system. While there is an abundance of available data, there is often an absence of knowledge creation, or a deficit in our ability to apply knowledge meaningfully (United Nations Department of Economic and Social Affairs, 2003). The efficacy of new developments must be substantiated through empirical research and then pushed out as a product or as codified knowledge, within a societal context.

Mounting evidence confirms that controlled collaboration of academia, industry, and government facilitates innovation and creative development while providing balance between the pursuit of focused knowledge, social benefit, and profit motivations. Increasingly, innovation is considered to be an event that occurs at the organizational level where knowledge can be quickly generated and diffused. Today's innovations tend to be the result of persistent, interdisciplinary, collaborative approaches to research (Best et al., 2003). Moreover, a triple helix of overlapping spheres of academia-industry-government is increasingly at the core, rather than the periphery, of regional, national and multinational innovation systems (Etzkowitz, 2003).

Shapira (2002) cites three compelling reasons to establish flexible partnerships with academia-industry-government networked infrastructures: Social benefit, economic efficiency, and sustainability. Trilateral collaborations energize partners to address local and national concerns through funded research programs. Partnerships can thus leverage human and material resources to generate novel solutions while furthering the acquisition of new knowledge. Partnerships can, therefore, significantly facilitate knowledge spillover and the transfer of scientific knowledge to tangible product development. Removing barriers to co-operation, supporting collaborations, and facilitating the exchange of science and technology personnel influences the orientation of research efforts toward societal needs, and enhances cooperation among international science and technology organizations.

Emerging literature that reviews university-industry-government networked infrastructures supports triple-helix collaborations as the key to improving the conditions for innovation in a knowledge-based society include Shapira (2002), Campbell (2005), Leydesdorff (2003), Etzkowitz (2002), and Sutz (1998). Triple helix research partnerships are considered the best promise for establishing long-term organizational

structures that allow for short-term intensive collaborative experiences (Campbell, 2005; Etzkowitz, 2003; Langford et al., 2005; and Leydesdorff and Fritsch, 2005).

Given this perspective on the optimal framework for engendering innovative outcomes, the Institute provides the following comments on the topical areas set forth in the April 13, 2007, *Federal Register* notice on "Innovation Measurement."

Comments on Topical Area

IV. Identification of specific "holes" in the current data collection system that limit our ability to measure innovation.

The discussion presented in Part III denotes missing source data; but the data gap is associated more with stimulating, rather than measuring, innovation. But, in fact, the "prodnoming" of products/services does yield an innovation metric—"new products produced in a period." This gap should be filled.

The human capital that drives innovation warrants further study. Research efforts at the Institute reveal that there are at least three very important deficits in the nation's data collection program. First, to our knowledge, although the nation has very good statistics on the completion of formal education, it lacks good data on certain aspects of "life-long learning." If human capital formation is motivated by returns, then there must be considerable returns to the human capital that is formed through semi-formal and informal training. We need more information about the quantities and prices that are associated with investment in human capital by life-long learners. The Bureau of Labor Statistics' Time Use Survey may offer an opportunity develop measures in this area. Second, and a related concern, is the nation's lack of information about language capacity. Immigration and formal and informal training enable U.S. citizens to possess language facility beyond English. These language skills are valuable. They enable a broadening of social networks, which often yield innovative outcomes when individuals serve as bridges across structural holes in diverse social networks (Burt, 2000). The Institute believes that full comprehension and measurement of innovation cannot be achieved without greater knowledge and data on the human capital that stokes the innovation process in the nation. Therefore, we urge the Advisory Committee to consider recommending the expansion of data collection in these two human capital formation areas.

Third, certain evidence indicates that collaborative interactions by scientists and researchers facilitate and enhance prospects for innovation—especially when those interactions transpire via cutting-edge information technology tools in a distributed environment. Consequently, the Advisory Committee should consider the need for data that will permit a thorough analysis and codification of this mechanism.

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